ASSOCIATION: [illegible] 1 diagram

SUBMITTED: 29May64 ENCL: 01 SUB CODE: IE, EM

NO REF SOV: 000 OTHER: 000

Card 1/2

L 6028-65

ACCESSION NR: AP5019056 ENCLOSURE: 01

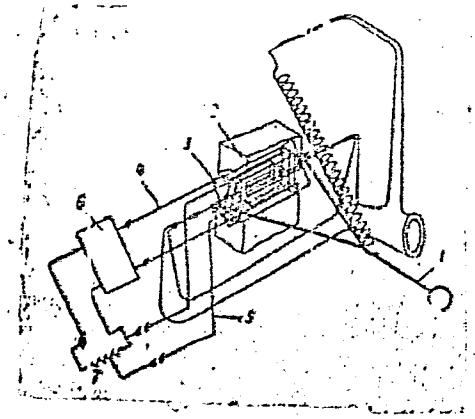


Fig. 1.

1- pendulum of the sensitive system; 2- permanent magnet; 3- frame; 4- first winding of the frame; 5- second winding of the frame; 6- amplifier; 7- potentiometer

L 7977-66 EWT(1) GW

ACC NR: AP5026536 SOURCE CODE: UR/0286/65/000/019/0079/0080

AUTHORS: Veselov, K. Ye.; Gaynanov, A. G.; Luginets, A. P.; Smirnov, L. P.; Shelkovnikov, G. I. 44,55

ORG: none

TITLE: Gravimeter for measuring the force of gravity in motion. Class 42, No. 175257 [announced by All-Union Scientific Research Institute of Geophysical Reconnaissance Methods (Vsesoyuznyy nauchno-issledovatel'skiy institut geofizicheskikh metodov razvedki)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 19, 1965, 79-80

TOPIC TAGS: gravimeter, gravimetry, gravitation

ABSTRACT: This Author Certificate presents a gravimeter for measuring the force of gravity while in motion. The gravimeter is provided with an automatic compensating system (see Fig. 1). It includes an elastic sensitive system, photoelectric converter of angular displacements, filter, amplifier, electric motor, reducer, and measuring potentiometer. To increase the accuracy of continuous measurements of the gravity force, the quartz sensitive system of the gravimeter

Card 1/2

UDC: 550.831

L 7977-66

ACC NR: AP5026536

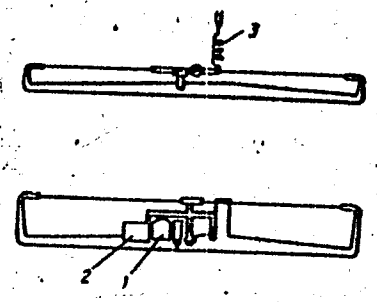


Fig. 1. 1- pendulum; 2- damping plate; 3- spiral compensating spring

is provided with a damping plate rigidly connected to a pendulum. The plate is located in the opening between the auxiliary immovable plates and a spiral compensating spring. The auxiliary plates and the spring are submerged in a viscous liquid. Orig. art. has: 1 figure.

SUB CODE: IE/ SUBM DATE: 18Sep63

Card 2/2

L 29710-66 EWP(1)/EWT(1)/EWT(m)/T/EWP(t)/ETI IJP(c) RM/GW/JD/JG
ACC NR: AT6015408 (N) SOURCE CODE: UR/02552/65/000/045/0145/0156

AUTHOR: Veselov, K. Ye.; Kalisheva, L. V.; Telepin, M. L.

42
40
B+1

ORG: none

TITLE: Using phase transitions to improve the thermostatic control of instruments

SOURCE: Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut geofizicheskikh metodov razvedki. Prikladnaya geofizika, no. 45, 1965, 145-156

TOPIC TAGS: phase transition, thermostat, gravimeter, gallium base alloy, ice, eutectic mixture

ABSTRACT: The authors consider methods for improving the accuracy of thermostatic control when using delicate instruments in physical experiments such as measuring the force of gravity for geological prospecting purposes. The thermostatting action of low-melting materials during phase transitions from the solid to the liquid state and back is considered as a possibility for practical use in highly accurate gravimetric measurements. The opposition to changes in temperature in this case is due to the latent energy of the phase transitions (melting--solidification) of the fusible materials. A thermostat based on the two-phase principle with ice as the fusible material was used for a quartz astatized gravimeter in 1954 at the Gravimetric Institute of the All-Union Scientific Research Institute of Geophysics. The instrument was found to be sensi-

Card 1/2

L 29710-66

ACC NR: AT6015408

2

tive to mechanical shock and caused sweating of some of the gravimeter glasses. Experimental thermostats using gallium, gallium-based eutectic alloys and hydrocarbons are described. Out of a total of 87 alloys which were studied, two were found to have promise as materials for two-phase thermostats: Ga-Zn (95% Ga, 5% Zn, melting point 25°) alloyed with lithium (2-3% Li) and bismuth (0.05-0.1% Bi), and Ga-Sn (92% Ga, 8% Sn, melting point 20°) alloyed with bismuth (0.5-1% Bi) and lithium (0.5-1% Li). The purity of the initial components, accuracy in maintaining the eutectic ratio and absence of harmful impurities are extremely important. The thermostat was made in the form of a double-walled polyethylene housing placed over the gravimeter case and put into a Dewar flask together with the gravimeter. The space between the walls of the thermostat was filled with the fusible material. Tests of the thermostat with a gallium-tin working alloy showed satisfactory resistance to thermal shock at the required temperature (20°). Among the hydrocarbons tested, the most satisfactory was n-heptadecane ($C_{17}H_{36}$) with a melting point of 22°. Field tests of a gravimeter using a two-phase thermostat based on this material showed a zero drift of 1.3 mgal/hr which is 1/10-1/20 of the drift for the same gravimeter without compensation. Orig. art. has: 3 figures, 1 table, 1 formula.

SUB CODE: 08/4/ ^ ORIG REF: 004/ OTH REF: 004

DATE SUBMITTED: none

Card 2/2 CC

L 44339-66 EWT(1) GW

ACC NR: AT6020749 (N) SOURCE CODE: UR/2552/65/000/046/0136/0139

AUTHOR: Veselov, K. Ye.; Bagramyants, V. O.

25
B+1

ORG: none

TITLE: Certain ways of improving marine shipborne gravimeters

SOURCE: Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut geofizicheskikh metodov razvedki. Prikladnaya geofizika, no. 46, 1965, 136-139

TOPIC TAGS: gravimeter, gravimetry, gravity survey, research ship instrumentation

ABSTRACT: The authors briefly discuss the basic design, shortcomings, and acceleration errors of nonastatized (SZ, Graf, and GAL) and astatized (Lacoste-Romberg) gravimeters used in surveys at sea. With the above gravimeters and accelerations of several gals, gravity measurements are accurate to about 1—3 mgals; for acceleration above 50 gals, accuracy is 10 mgals at best. The effects on gravimeter accuracy of horizontal and vertical motions are analyzed briefly in terms of short-term and long-term accelerations, gimbal tilt, and gravimeter support tilt. It is stated that continuous measurement of horizontal and vertical accelerations and gimbal tilt makes it possible to determine corrections, but significantly increase the amount of equipment required and complicate information processing. The use of precision gyrostabilized platforms is recommended, and modern gyroplatforms accurate to several angular minutes are described as satisfactory for use with ship

Card 1/2

ACC NR: AT6020749

gravimeters. The authors conclude that both the gravimeter arm and support must be kept in the initial horizontal position to avoid the systematic effect of accelerations and tilt on readings. This can be accomplished by feedback, i.e., automatic compensation for vertical accelerations, where the compensating moment is the sum of the vertical acceleration component and gravity acceleration, and is free of the above systematic effect. Variations of moment should be recorded in a digital code for subsequent computer processing. [LB]

SUB CODE: 08/ SUBM DATE: none

Card 2/2 blg

ACC NR: AT6020750 (N) SOURCE CODE: UR/2552/65/000/046/0140/0148

AUTHOR: Veselov, K. Ye.; Gerenblat, N. M.

ORG: none

TITLE: Effects of vibration on readings with quartz astatic gravimeters not compensated for temperature

SOURCE: Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut geofizicheskikh metodov razvedki. Prikladnaya geofizika, no. 46, 1965, 140-148

TOPIC TAGS: gravimeter, gravimetric survey

ABSTRACT: The paper summarizes the results of an investigation of the reliability of gravimeter readings conducted at the Gravimetric Laboratory of the VNII Geofizika. Over ten gravimeters of Soviet manufacture were investigated. In general, the principal errors of readings with the quartz astatic gravimeter not compensated for temperature are due to: low sensitivity of the system, inadequate temperature compensation, poor heat insulation, inadequate precision of the micrometer screw, susceptibility to vibration, susceptibility to seismic microshocks, and the long time needed to make a reading. Various curves were produced to illustrate: the effect of wind; the effect of an Alaskan earthquake, which was felt 2 hours later and which had an amplitude of 0.2 milligal and a period of 300 sec; instrument susceptibility, when located in a

Card 1/2

ACC NR: AT6020750

basement or on the 2nd floor of the same building; effects of the stand's vibration on the 0-point of the instrument; and the effect of radioactive ionization, which lowered the readings without any definite relationship. Two graphs of parallel experiments were carried out: one at a constant amplitude and a variable frequency, and the other at a variable amplitude and a constant frequency. The results were: a) the response of an astatic system is not a linear function, b) motions of moving parts are dampened in air, c) errors due to the pendulum's position with reference to the horizontal plane and its oscillations are cumulative. The last statement includes errors due to a roughness of the pendulum's surface and its being off-center. The following conclusions were reached: 1) errors may be caused by seismic waves of low frequency (0.003--0.006 hertz), 2) errors may be caused by high frequencies even if their amplitudes are negligibly small, 3) the effect of high frequency of seismic microwaves can be diminished by improving the pendulum's symmetry and by increasing the ratio of its moment of inertia to its moment of mass. The authors consider that much remains to be done in this direction. Orig. art. has: 9 figures.

SUB CODE: 08/ SUBM DATE: none/ ORIG REF: 002

Card 2/2

L 23615-66 EWT(1) GW

ACC NR: AP6009540 (A,N) SOURCE CODE: UR/0413/66/000/005/0075/0075

AUTHOR: Veselov, K. Ye.; Marayev, I. S.; Nemtsov, L. D.

ORG: none

TITLE: A device for suspension of a gravimeter while measuring increments in the force of gravity on bodies of water. Class 42, No. 179485

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 5, 1966, 75

TOPIC TAGS: gravimeter, earth science instrument

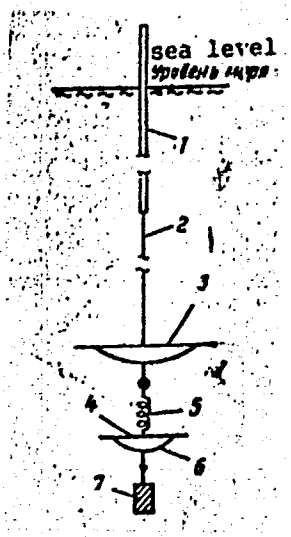
ABSTRACT: This Author's Certificate introduces a device for suspension of a gravimeter while measuring increments in the force of gravity on bodies of water. The unit is made up of a buoy with a cable. The device is designed for increasing the efficiency of gravimetric measurements on the sea bottom and for making these measurements at predetermined depths. The buoy is connected to dampers which are interconnected by an elastic coupling and equipped with additional reservoirs for buoyancy compensation.

UDC: 550.831

Card 1/2

L 23615-66

ACC NR: AP6009540



1--buoy; 2--cable; 3 and 4--dampers; 5--elastic coupling; 6--buoyancy compensation reservoirs; 7--gravimeter

SUB CODE: 08/ SUBM DATE: 09Mar65/ ORIG REF: 000/ OTH REF: 000

Card 2/2

VESELOV, L.A.

Using the tangential feed method for groove rolling on the pedestals of spinning machines. Izv. vys. ucheb. zav.; tekh. tekst. prom. no.4:131-136 '63. (MIRA 16:11)

1. Kostromskoy tekhnologicheskiy institut.

VISELOV, L.A.

Parameters of the tangential rolling of the cylinder pedestals of flax spinning machines. Izv. vys. uchsb. zav.; tekh. tekst. prom. no.6:176-183 '63 (MIRA 17:8)

1. Kostromskoy tekhnologicheskiy institut.

BARONOV, P.N.; VESELOV, L.G.

Complex use of aerial and land magnetic surveys for the purposes of geological mapping. Geol. i geofiz. no.10:145-155 '64. (MIRA 18:4)

1. Tsentral'naya geofizicheskaya ekspeditsiya, Novokuznetsk.

VESELOV, L.I.

Making boxes of corrugated cardboard. Trudy NIL Tary no.4:59-72 '60. (MIRA 14:12)

1. Prinimali uchastiye: Zaytsev, A.N.; Suchil'nikova, Z.I. (Paper box industry)

VESELOV, L.V.

Metrological precision of projecting optical measuring instruments and the problem of precise combinations. Standartizatsiia 29 no.10:63 O '65.

(MIRA 18:12)

L 11181-67 EWP(k)/EWP(h)/EWT(d)/EWP(l)/EWP(v)
ACC NR: AP6030297 (N) SOURCE CODE: UR/0310/66/000/008/0027/0028

AUTHOR: Veselov, M.; Kita, V.; Smantser, A. 14

ORG: None 14

TITLE: Automatic regulation of steam pressure in KV-3 boiler

SOURCE: Rechnoy transport, no. 8, 1966, 27-28

TOPIC TAGS: steam boiler, steam auxiliary equipment, marine engineering / KV-3 steam boiler

ABSTRACT: A new automatic pressure control system was mounted on the KV-3 boiler of the steamship "Sadovod" (Moscow Steamship Agency) and operational suitability tests were conducted during the navigation period of 1965. The adjustment of this system to the control of steam pressure in KV-3 boilers is described and the adaptability of the system to the actual steamship conditions is evaluated. The main pressure gauge of the system includes a corrugated chamber and actuating lever-valve mechanism. It is mounted on the steam-and-water drum and is connected by pipes with the drum, the steam and fuel servomotor circuit and the boiler furnace. The arrangement of the system is illustrated in a diagram. The automatic system can handle rapidly fluctuating boiler loads with only a small fluctuation of steam pressure. The operation of the system is explained and the attainment of better combustion conditions and higher efficiency is stressed. The system

Card 1/2 UDC: 621.186.5.002

L 11181-67

ACC NR: AP6030297

can be used for marine and stationary boilers. A further development of this system is recommended, especially in connection with the eventual replacement of the presently used hydraulic system. Orig. art. has: 1 diagram.

SUB CODE: 13/ SUBM DATE: None

Card 2/2 hl

40759

S/120/62/000/004/040/047
E039/E420

24.6700

AUTHORS: Veselov, M.A., Gol'din, L.L., Kirpichnikov, I.V., Lomkatsi, G.S., Sidorenko, Z.S., Sysoyev, Ye.A.

TITLE: Investigation of the magnetic field configuration in the X-blocks of the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 212-217

TEXT: The magnetic field configuration is measured in 14 compensating blocks at various levels of induction from 80 gauss up to 8000 gauss. Magnetic field gradients are measured with an accuracy of better than 0.1% and the displacement of the neutral point obtained with an accuracy of 0.05 to 0.07 mm. A plexiglass carriage is located on the magnet poles and can traverse the whole length of the block (1910 mm). This carriage contains three pairs of permalloy probes for measurements in low fields and three pairs of coils for the medium and large fields. The field characteristics are measured at 31 points along the 14 X-blocks. The distribution of the field and its gradient is obtained near the axis of symmetry for 5 values of induction (82, 106, 210, 2600 and 7500 Oe) and on 6 of the C-blocks at

Card 1/2

8400 Oe. These measurements are compared with similar measurements on C-blocks. It is shown that displacement of the neutral point depends on the residual field. Displacement also occurs in strong fields because of core saturation. The results are presented graphically and discussed in some detail. The coordinates of the pole pieces with respect to the geodetic markers are determined to an accuracy of 0.03 to 0.04 mm. There are 8 figures.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: March 31, 1962

VESELOV, M. A.

40761

S/120/62/000/004/042/047
E140/E420

AUTHORS: Barmin, V.V., Bysheva, G.K., Tumanov, G.K., Agapkin, I.I., Andreyev, V.N., Veselov, M.A., Gol'din, L.L., Luzin, V.N., Radkevich, I.A., Sokolovskiy, V.V., Stadnikov, A.G.

TITLE: Investigation and correction of the horizontal component of the low-induction magnetic field of the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 223-229

TEXT: Permalloy probes modulated at 10 kcs were used to measure the position of the neutral plane of the magnetic field. It was found that the distortion of the neutral plane in the residual field was determined mainly by the neutral pole. This distortion decreased as the excitation of the C-blocks was increased. Due to hysteresis effects, the measurements had to be carried out under operating conditions. A description of the probe and its associated circuits is given. The measurements show that 67 of the maghets have a deviation of the neutral plane in the range ± 0.5 mm, 16 magnets have 0.5 to 0.6 mm, 3 magnets 0.6 to 0.7 mm

Card 1/2

Investigation and correction ...

and 12 magnets $\geqslant$ 0.7 mm. The average error of measurement is $\pm$ 0.17 mm. The method of correcting the neutral plane errors by means of windings on the neutral poles is described. There are 11 figures.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: April 11, 1962

Card 2/2

40765
S/120/62/000/004/046/047
E039/E420

24,6730

AUTHORS: Vladimirskiy, V.V., Barabash, L.Z., Pligin, Yu.S., Veselov, M.A., Talyzin, A.N., Tarasov, Ye.K., ~~Kuz'min, A.A.~~

TITLE: Measurement of the frequency of transverse oscillation of the beam of the 7 Gev proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 245-247

TEXT: Periodic oscillations of the centre of gravity of separate bunches in the proton beam are observed with the aid of the signal electrodes used for determining the beam position. The signals are amplified with a wide band amplifier and observed on a double beam oscillograph using photographic recording. At 0.5 m sec after injection transverse oscillations connected with small initial oscillations of the beam at the moment of injection are observed. These transverse oscillations decay rapidly in 2 to 3 msec. The basic measurements were therefore made by artificially exciting oscillations by applying a transverse electric field ε = 1 to 1.5 KV/cm over a length of $\simeq$ 20 cm for a time of 4 to 10 μ sec. The amplitude of oscillation of the beam in one

Card 1/2

Measurement of the frequency ...

revolution is then $A = 400\ e\varepsilon\ell/pv$ cm where p is the pulse and v is the proton velocity. Immediately after injection the amplitude is about 1 cm and after 100 msec about 0.5 mm. To facilitate analysis the time of injection was limited to about 5 μ sec for a duration of revolution of 9 μ sec and in addition a sinusoidal signal with a frequency of 7/8 the frequency of revolution of the beam is presented on the second trace of the oscillograph. Results are presented showing the frequencies of vertical and radial oscillations which are very near to resonance values: $Q_{z\ max} = 12.94$ and $Q_{r\ min} \simeq 12.55$.
There are 2 figures and 2 tables.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: May 18, 1962

Card 2/2

40766

S/120/62/000/004/047/047
E039/E420

24.6800

AUTHORS: Vladimirskiy, V.V., Gol'din, L.L., Pligin, Yu.S., Veselov, M.A., Talyzin, A.N., Tarasov, Ye.K., Koshkarev, D.G., Lapitskiy, Yu.Ya., Barabash, L.Z. Kleopov, I.F., Lebedev, P.I., Kuz'min, A.A., Batalin, V.A., Onosovskiy, K.K., Uvarov, V.A., Vodop'yanov, F.A.

TITLE: Adjustment of the acceleration regime of the 7 Gev proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 248-255

TEXT: In order to establish the optimum parameters for programming the control frequency the intensity, position, and frequency and amplitude of transverse oscillation of the beam is measured in three stages: (1) during the first revolution, (2) with a circulating beam and (3) with acceleration. For measurements on the first revolution long afterglow scintillation screens are used which are either observed visually or by means of a television camera. The screens are placed in the sections between magnet blocks; 15 in the initial part and 10 in the final part of the chamber. It is shown that the orbit does not

Card 1/2

Adjustment of the acceleration ...

deviate by more than 1.5 cm from the axis during the first revolution. Circulating beams without acceleration are obtained which continue for 20 to 30 revs. The circulating current is determined by means of a flight tube and the transverse oscillation frequency with an electrostatic probe with double vertical and horizontal plates. Scintillation screens in the form of a grid with 85% transmission are used to show the beam position and diameter for 5 to 10 revs. The beam diameter is shown to be about 4 cm under normal conditions. Investigations are carried out on the optimum form of the frequency - time relation for holding the beam in orbit. The width of the trapping region is $\pm$ 3 Kc/s for an initial frequency of 750 Kc/s which agrees well with theoretical estimates. Preliminary adjustment permitted the attainment of 6.2 Gev protons and after adjustment 7.2 Gev protons were obtained on October 25, 1961. The usual intensity on a normal cycle lies in the range 3 to 5 x 10^9. There are 7 figures and 1 table.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: April 11, 1962

Card 2/2

L 1440-66 EWT(m)/EPA(w)-2/EWA(m)-2 IJP(c)

ACCESSION NR: AT5015940 UR/3092/65/000/003/0106/0110

AUTHOR: Veselov, M. D.; Gerbovetskiy, V. M.; Mozin, I. V.

TITLE: Measuring the position of the magnetic median plane of the electromagnet in a 70-Bev accelerator

SOURCE: Moscow. Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury. Elektrofizicheskaya apparatura; sbornik statey, no. 3, 1965, 106-110

TOPIC TAGS: particle accelerator, proton synchrotron, 70 Bev proton synchrotron

ABSTRACT: The median-plane position was determined by measuring a radial field component in a plane lying close to the geometrical median plane of the proton-synchrotron gap. Field measurements were made, with an error ± 0.07 oe (which ensured a 0.8-mm mean-square allowance for the random spread of the median-plane position), in the working part of the cycle, at a 72-oe injection field.

Card 1/2

L 1440-66
ACCESSION NR: AT5015940

Field-rise time, 1.5 sec; field-shape repeatability error, 1—2%. A block diagram and a principal circuit diagram of the electronic instrument used in the measurements are given, as well as a sketch of a special adjustable holder for the permalloy field-strength sensor. Orig. art. has: 4 figures and 1 formula.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: NP, EC

NO REF SOV: 001 OTHER: 000

Card 2/2 DP

S/120/62/000/004/032/047
E140/E420

AUTHORS: Alekseyev, A.G., Veselov, M.D., Mozalevskiy, I.A., Rozhdestvenskiy, B.V., Trokhachev, G.V.

TITLE: Magnetic measurements at the factory on the electromagnet blocks of the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 172-178

TEXT: To obtain more precise experimental data than were available from models and to check the production, factory measurements were carried out on the electromagnet blocks in groups of three in conditions approximating to the working cycle. Reproducibility of the wavefront and maximum current in the test set-up was about 2%. In the first measurements, two C-blocks (focusing and defocusing) and one X-block were studied for the basic characteristics of the magnetic field - the distribution of induction and gradient in azimuth, nonlinearity, decay index as a function of induction, etc. The remaining blocks were only subjected to calibration tests, which permitted the scatter in mean magnetic field characteristics to be determined and defective blocks to be rejected. The article describes the

Card 1/2

Magnetic measurements ...

equipment and gives typical results on precision of measurement and scatter of characteristics measured: e.g. the mean square deviation of the dynamic component of the field at 55 gauss was 0.26%, at 2500 gauss 0.1% and at 8550 gauss 0.24%. Control measurements on the assembled electromagnet showed that the effect of adjacent blocks (excluding X-blocks) did not produce a significant change in the factory measurements. There are 16 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury GKAE (Scientific Research Institute for Electrophysical Apparatus GKAE)

SUBMITTED: April 10, 1962

Card 2/2

VESELOV, M. D.

24 6730

S/120/62/000/004/034/047
E140/E420

AUTHORS: Talyzin, A.N., Gol'din, L.L., Trokhachev, G.V., Radkevich, I.A., Mozalevskiy, I.A., Sokolovskiy, V.V., Kukavadze, G.M., Belozerova, L.A., Borisov, V.S., Bysheva, G.K., Veselov, M.D., Goryachev, Yu.M.

TITLE: Investigation and correction of the magnetic characteristics of the proton synchrotron C-blocks at small fields

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 184-192

TEXT: Comparative measurements are made on the C-blocks in the residual field (~35 Oe) the injection field (87 Oe) and the field at the beginning of the acceleration cycle (117 Oe). The iron for the magnet blocks was not pre-selected. This had no substantial effect on differences in the dynamic characteristics of the C-blocks, but the differences in residual field constituted 4.25% on the average and reached up to 10%. The mean-square deviation of the magnetic induction was 4.25%, and 1.4% in the injection field, thus exceeding by far the allowable tolerances. The variations were compensated by shunt resistances

Card 1/2

Investigation and correction ...

and by changing the order of the blocks. The present article is concerned with the measurement of the magnetic field intensity and its gradient in the residual field, the compensation by resistances connected across compensation windings, compensation of C-blocks at injection, with investigation of the dynamic characteristics. The equilibrium orbit in the synchrotron has not yet been studied in detail but it is found that either as a result of these corrections or the arrangement of the blocks, the loss of particles is fairly small. There are 7 figures and 1 table.

ASSOCIATIONS: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)
Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury GKAE (Scientific Research Institute for Electrophysical Apparatus GKAE)

SUBMITTED: March 31, 1962

Card 2/2

TALYZIN, A.N.; GOL'DIN, L.L.; TROKHACHEV, G.V.; RADKEVICH, I.A.; MOZALEVSKIY, I.A.; SOKOLOVSKIY, V.V.; KUKABADZE, G.M.; BELOZEROVA, L.A.; BORISOV, V.S.; BYSHEVA, G.K.; VESOLOV, M.D.; GORYACHEV, Yu.M.

Study and corrective measurements of the magnetic characteristics of S-elements of a proton synchrotron with low fields. Prib. i tekh. eksp. 7 no.4:184-192 Jl-Ag '62. (MIRA 16:4)

1. Institut teoreticheskoy i eksperimental'noy fiziki Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR i Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR.
(Magnetic measurements) (Synchrotron)

ALEKSEYEV, A.G.; VESELOV, M.D.; MOZALEVSKIY, I.A.; ROZHDESTVENSKIY, B.V.; TRUKHACHEV, G.V.

Factory stand testing of electromagnet elements of a proton synchrotron. Prib. i tekh. eksp. 7 no.4:172-178 Jl-Ag '62. (MIRA 16:4)

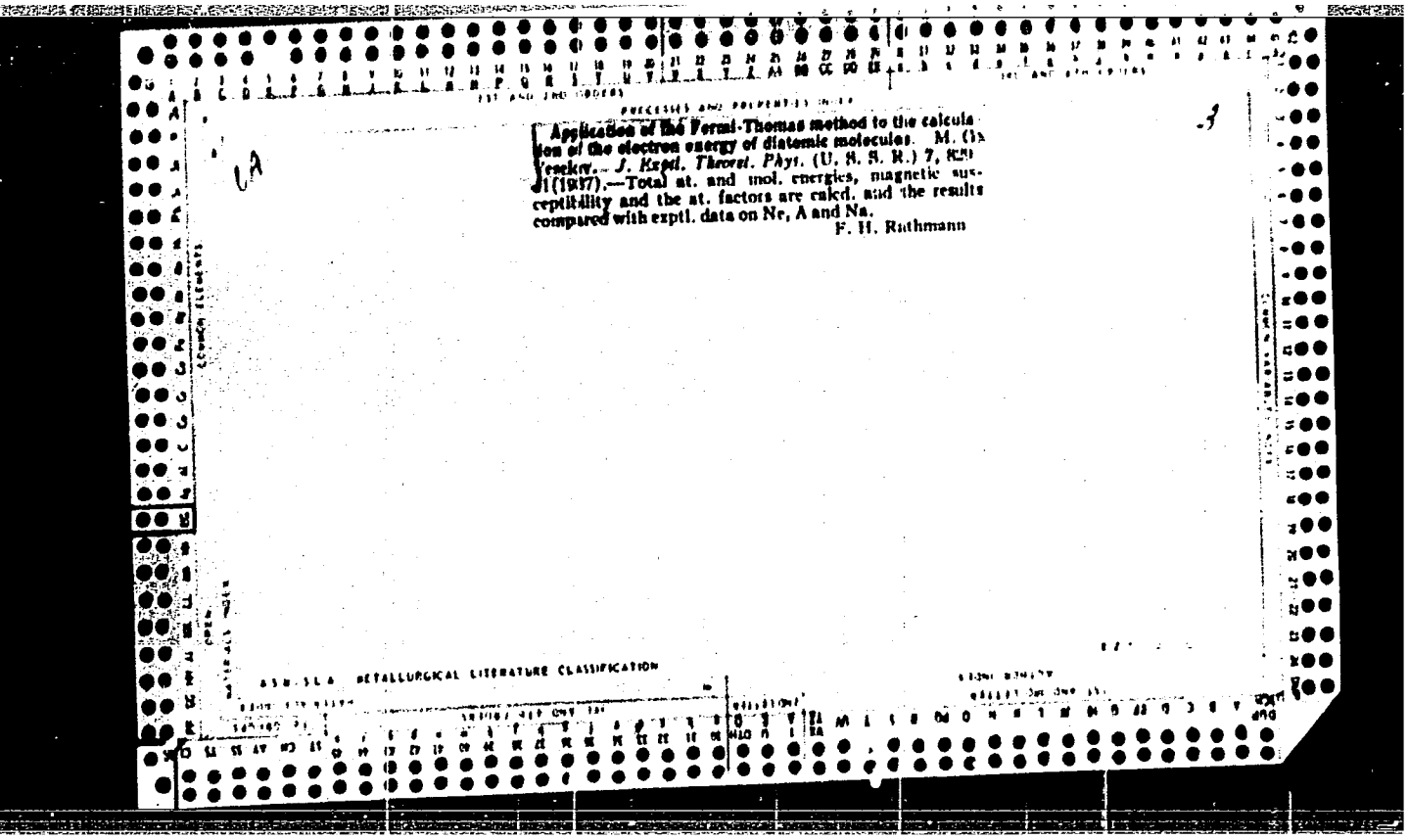
1. Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR.
(Electromagnets) (Synchrotron)

VESELOV, M.G.; BERSUKER, I.B.

Computation of the lithium atom in adiabatic approximation and calculation of the nuclear magnetic moment. Opt. i spektr. 13 no.3:297-301 S '62. (MIRA 15:9)
(Nuclear moments)
(Lithium)

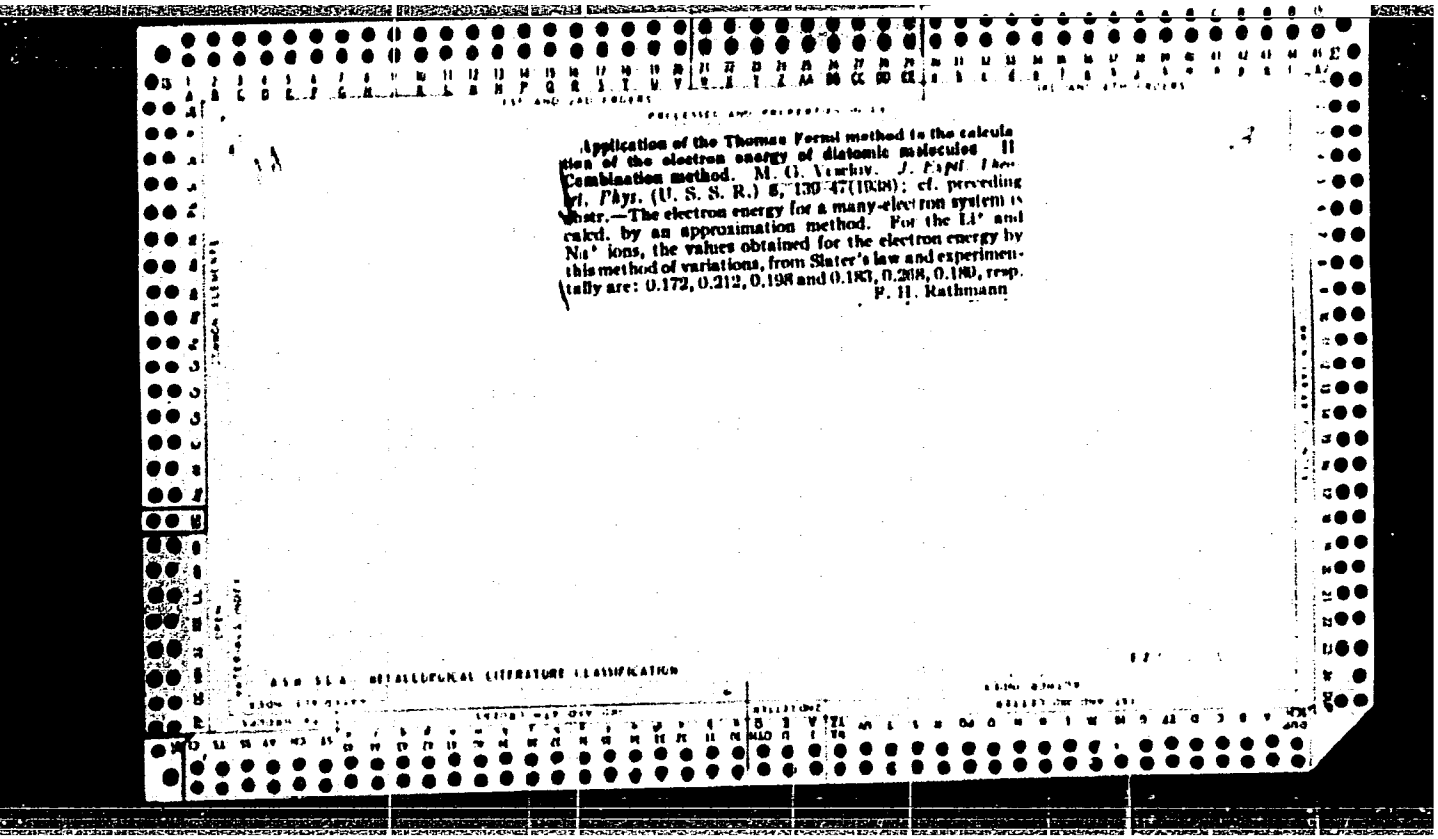
VESELOV, M.G.; LABZOVSKIY, L.N.

Allowing for mutual exchange in adiabatic approximations in atomic theory. Vest. LGU 17 no.16:30-35 '62. (MIRA 15:9)
(Atomic theory) (Electrons)

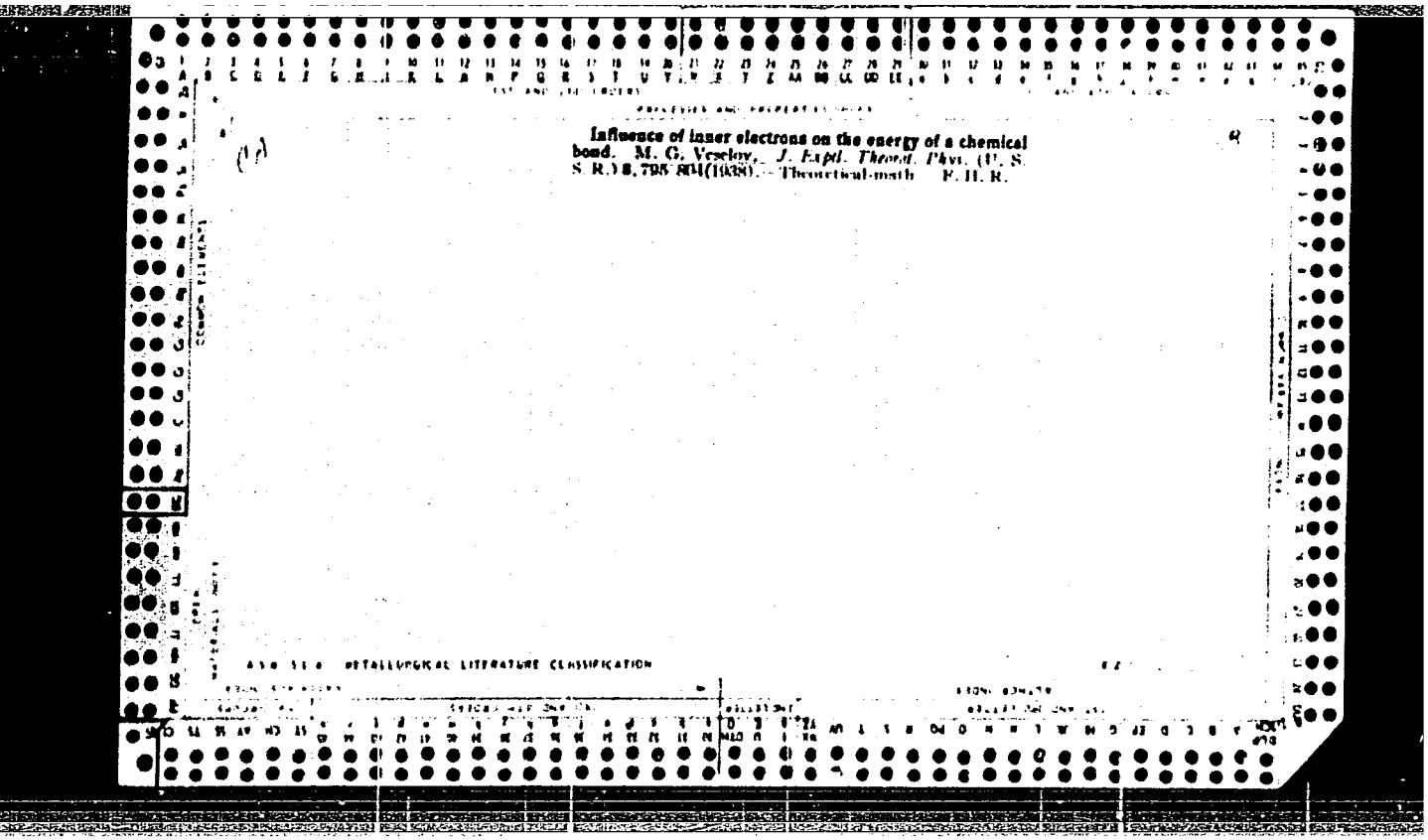


Application of the Fermi-Thomas method to the calculation of the electron energy of diatomic molecules. M. (Mrs.) Veselov. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 7, 859-71 (1937).—Total at. and mol. energies, magnetic susceptibility and the at. factors are calcd. and the results compared with exptl. data on Ne, A and Na.
F. H. Ruthmann

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

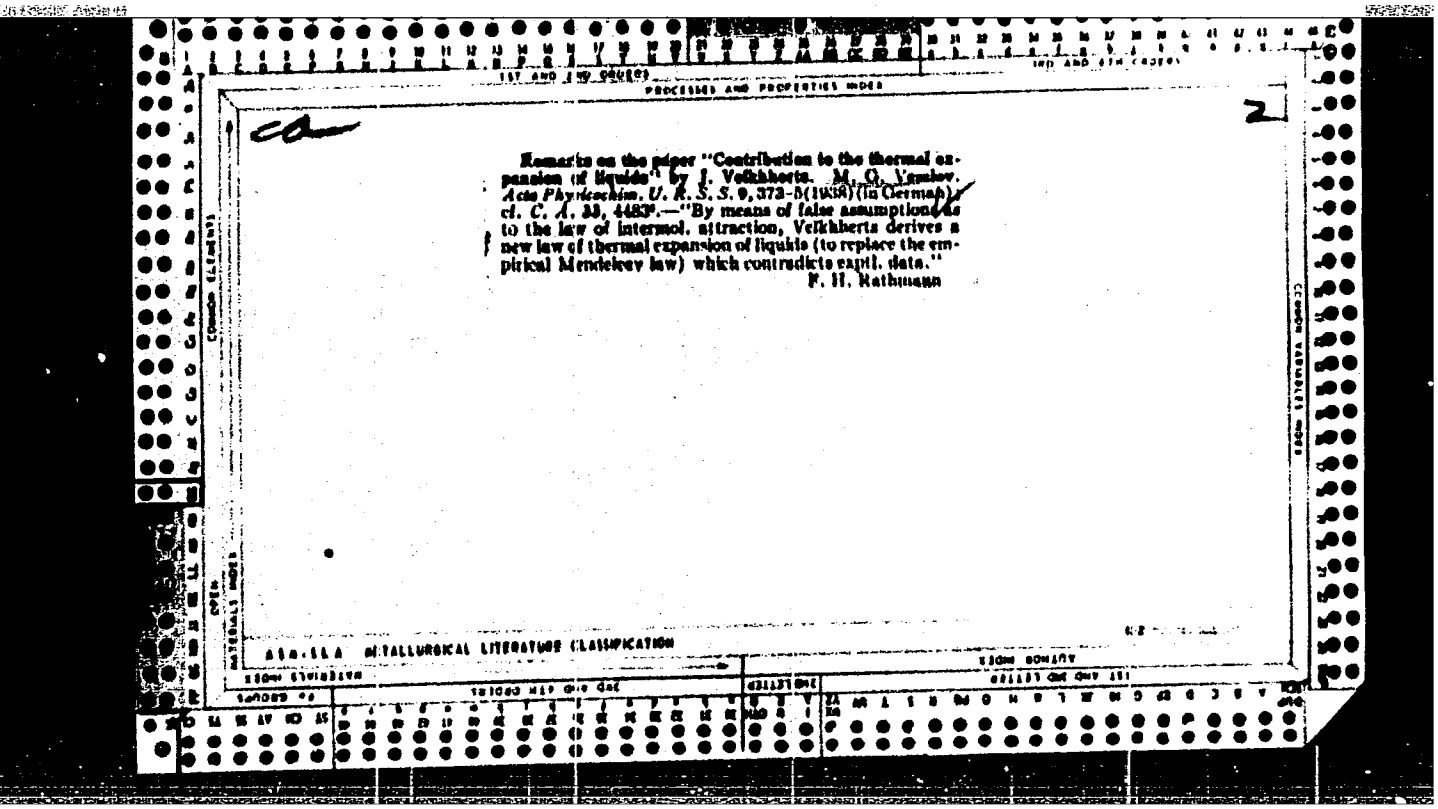


Application of the Thomas Fermi method to the calculation of the electron energy of diatomic molecules II Combination method. M. G. Veselov. *J. Expll. Theor. Phys.* (U. S. S. R.) 8, 130-47(1938); cf. preceding abstr.—The electron energy for a many-electron system is calcd. by an approximation method. For the Li^+ and Na^+ ions, the values obtained for the electron energy by this method of variations, from Slater's law and experimentally are: 0.172, 0.212, 0.198 and 0.183, 0.208, 0.180, resp.
P. H. Rathmann



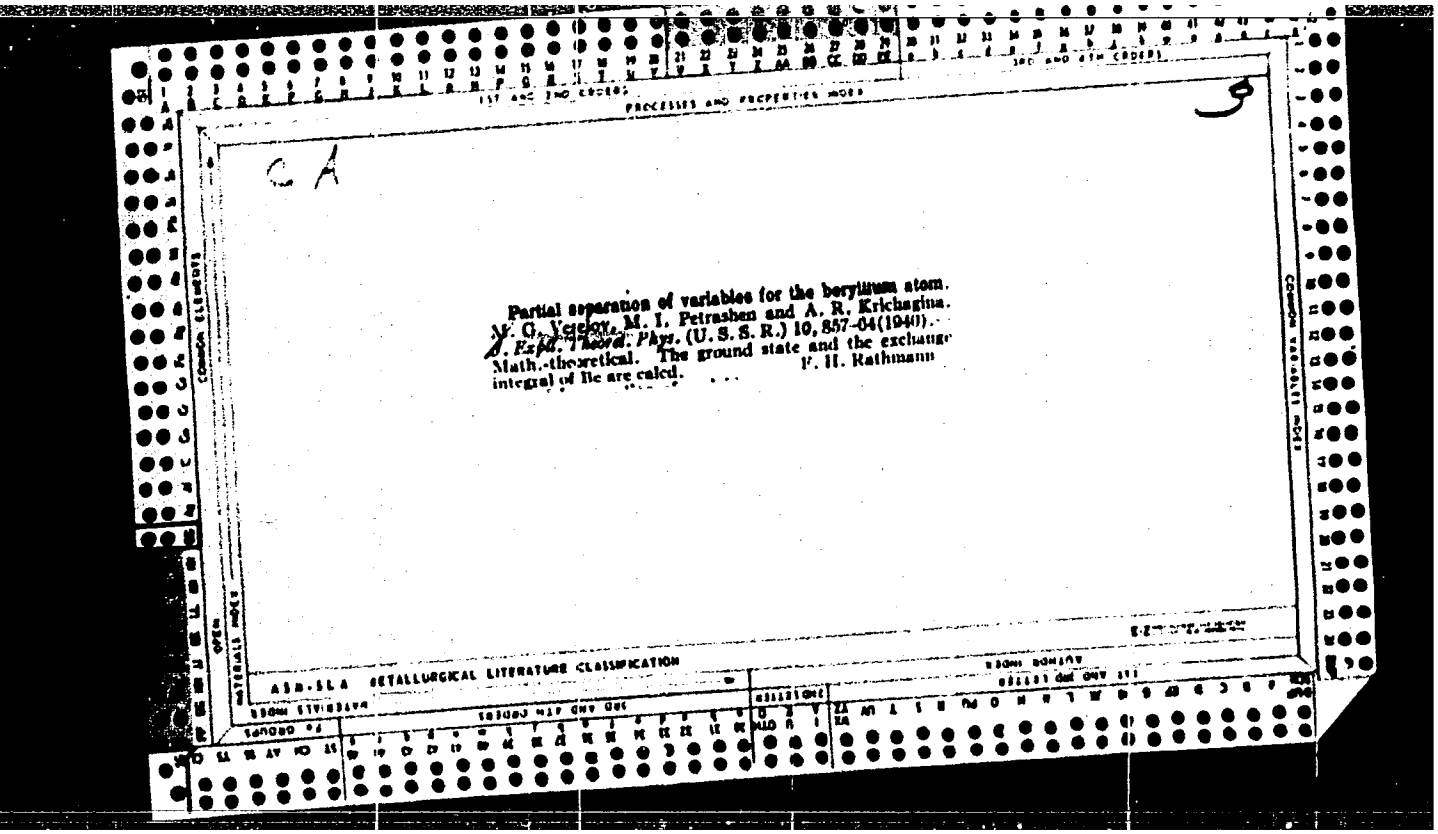
Influence of inner electrons on the energy of a chemical bond. M. G. Veselov. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 8, 795-804(1938).—Theoretical-math F. H. R.

METALLURGICAL LITERATURE CLASSIFICATION



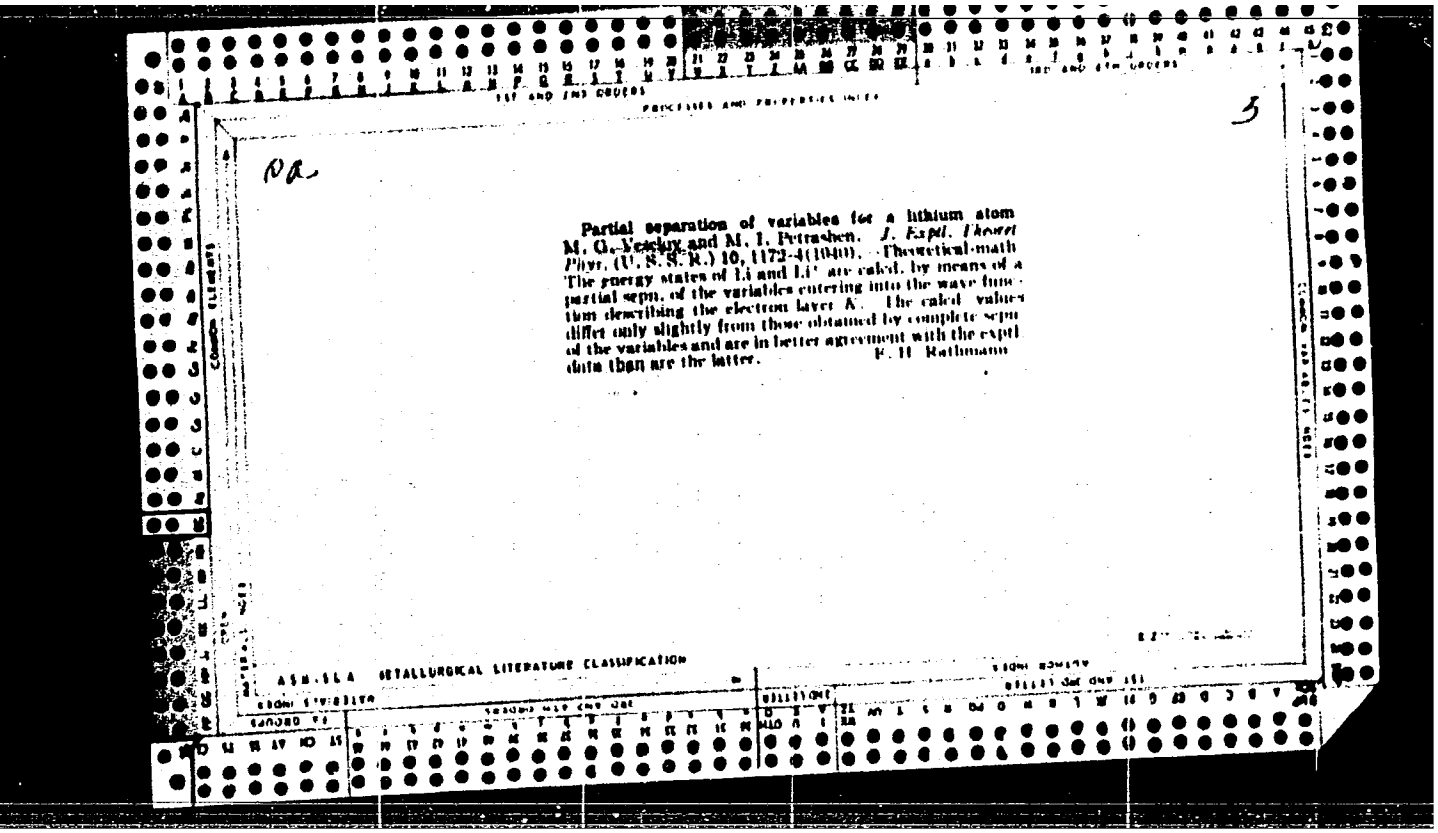
Remarks on the paper "Contribution to the thermal expansion of liquids" by J. Velikhberts. M. O. Vyazlov. *Acta Physicochim. U. R. S. S.* 9, 373-8(1938)(in German); cf. *C. A.* 33, 4483⁹.—"By means of false assumptions as to the law of intermol. attraction, Velikhberts derives a new law of thermal expansion of liquids (to replace the empirical Mendeleev law) which contradicts exptl. data."

F. H. Rathmann

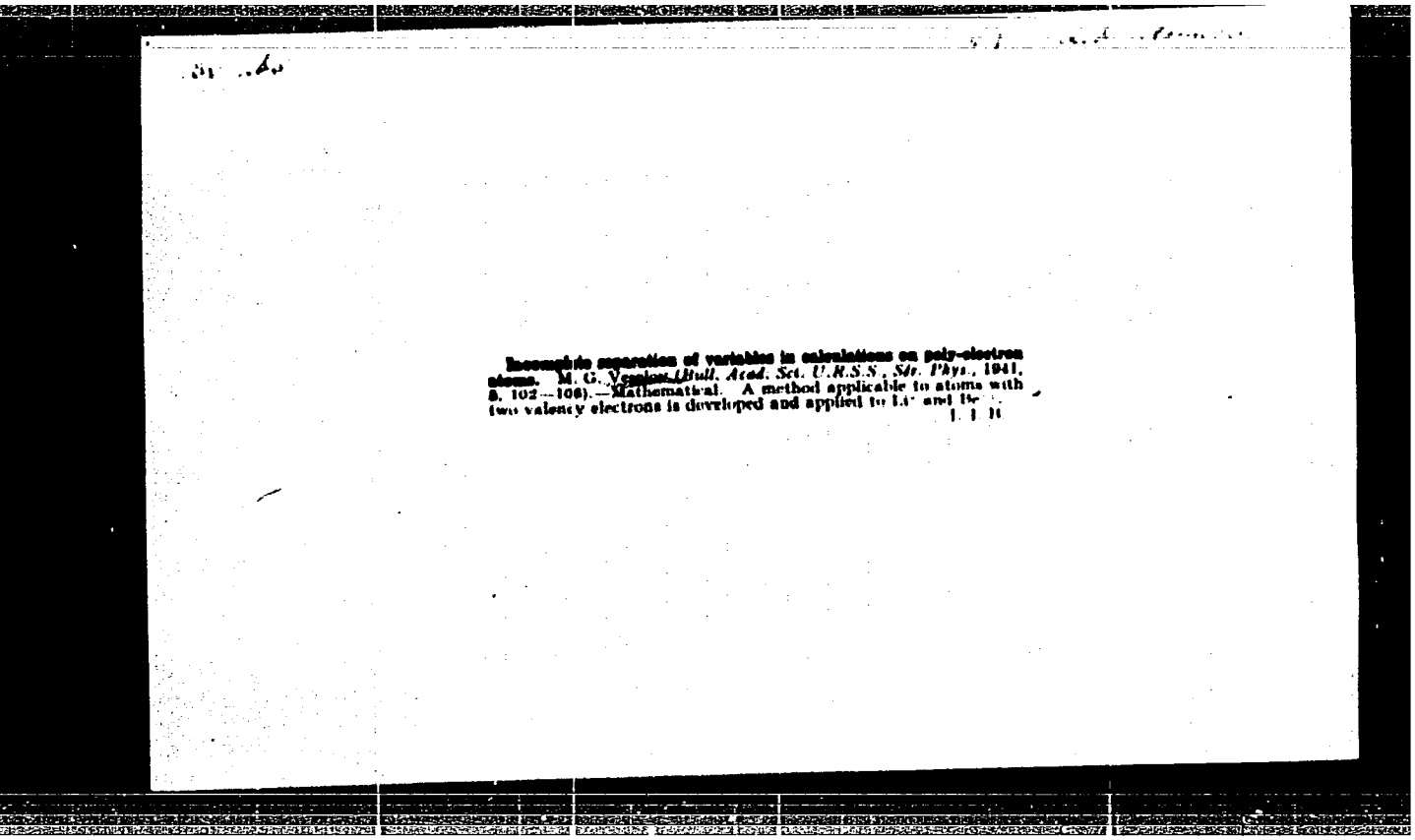


CA

Partial separation of variables for the beryllium atom. V. G. Veselov, M. I. Petrashen and A. R. Krichagina. *J. Expl. Theoret. Phys.* (U. S. S. R.) 10, 857–64(1940).—Math.-theoretical. The ground state and the exchange integral of Be are calcd. . . . F. H. Rathmann



Partial separation of variables for a lithium atom
M. G. Veksler and M. I. Petrashen. *J. Exptl. Theoret Phys.* (U. S. S. R.) 10, 1173-4(1940). Theoretical-math
The energy states of Li and Li⁺ are calcd. by means of a
partial sepn. of the variables entering into the wave func-
tion describing the electron layer A. The calcd. values
differ only slightly from those obtained by complete sepn
of the variables and are in better agreement with the exptl
data than are the latter. F. H. Rathmann



Incomplete separation of variables in calculations on poly-electron atoms. M. G. Veniaminov. *Bull. Acad. Sci. U.R.S.S., Sér. Phys.*, 1941, 5, 102—106). — Mathematical. A method applicable to atoms with two valency electrons is developed and applied to Li⁺ and Be⁺⁺.

J. J. H.

CA

2

Quantum mechanical calculation of the polarisability of the hydrogen molecule. M. G. Veselov and M. N. Adamov. *Doklady Akad. Nauk S.S.S.R.* 57, 235–8(1947); (*Chem. Zentr.* (*Russian Zone Ed.*) 1948, I, 1275.—The direct calcn. of the polarisability of atoms is difficult, since the formulas contain functions that can be evaluated only with difficulty. The authors obtain the equation $\delta\int\psi_0\psi[(V - E_0)f + {}^1/_2(\text{grad } f)^2]d\tau = 0$, where ψ_0 is the wave function. This leads to better agreement with exptl. data than Hirschfelder (*C.A.* 30, 7184[1]) and Basthope (*C.A.* 30, 8470[2]) obtained.

T. G. Gibian

1

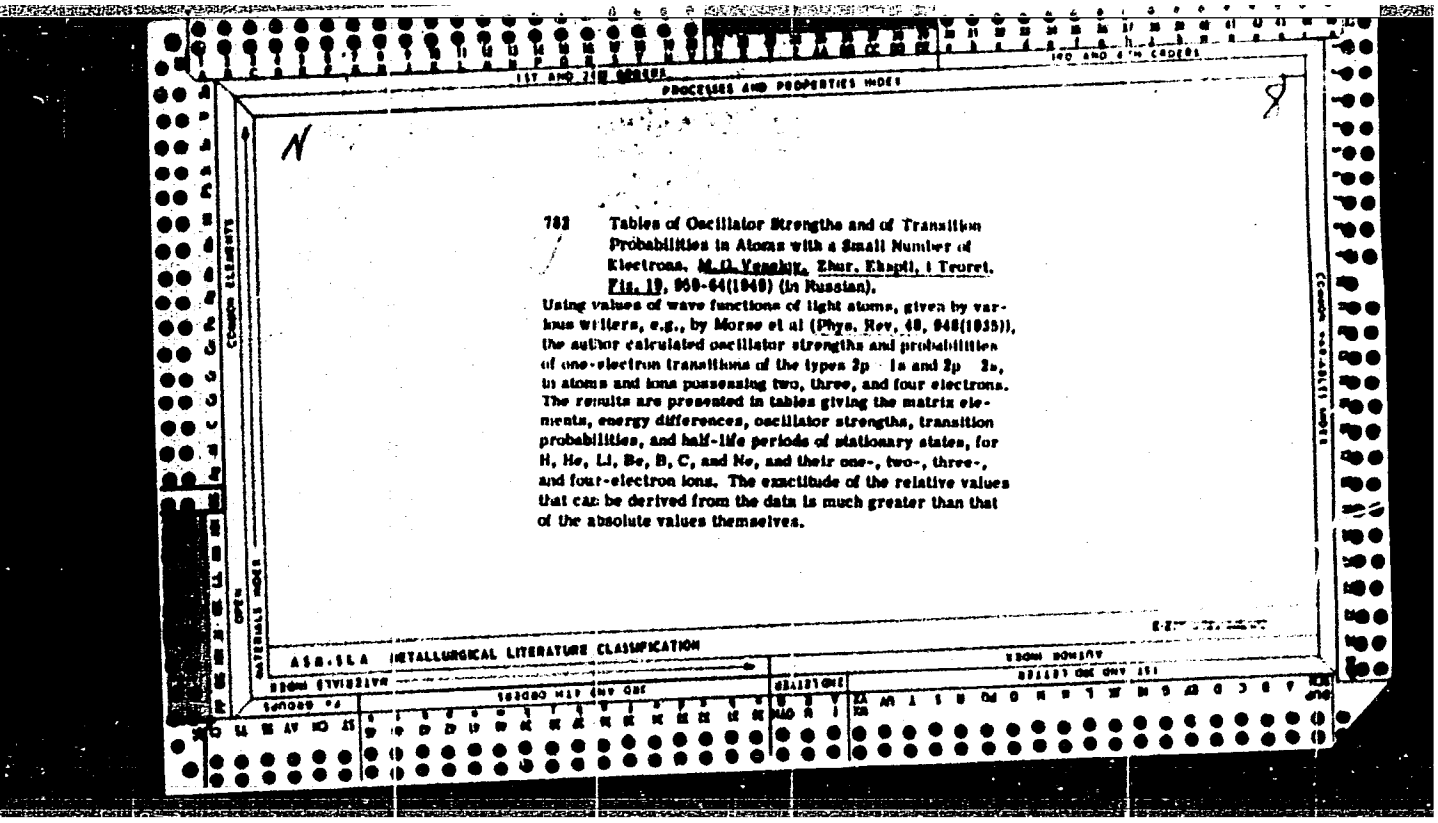
1. VESELOV, M. G.; PAVINSKIY, P. P.

2. USSR (600)

4. Physics and Mathematics

7. Field Theory. L. Landau and Ye. Lifshits.(Second revised edition, Vol. 4, Moscow-Leningrad, State Technical Press, 1948). Reviewed by M. G. Veselov and P. P. Pavinskiy. Sov. Kniga, No. 2, 1950.

9. [redacted] Report U-3081, 16 Jan. 1953. Unclassified.



782 Tables of Oscillator Strengths and of Transition Probabilities in Atoms with a Small Number of Electrons. M. D. Vasshy, Zhur. Eksptl. i Teoret. Fiz. 19, 959-64(1949) (in Russian).

Using values of wave functions of light atoms, given by various writers, e.g., by Morse et al (Phys. Rev. 48, 948(1935)), the author calculated oscillator strengths and probabilities of one-electron transitions of the types 2p - 1s and 2p - 2s, in atoms and ions possessing two, three, and four electrons. The results are presented in tables giving the matrix elements, energy differences, oscillator strengths, transition probabilities, and half-life periods of stationary states, for H, He, Li, Be, B, C, and Ne, and their one-, two-, three-, and four-electron ions. The exactitude of the relative values that can be derived from the data is much greater than that of the absolute values themselves.

USSR

VESELOV, M.G.; REKASHEVA, T.M.

Calculating the induction effects in the "metallic" model of molecules.
Vest.Len.un.9 no.5:149-151 My '54. (MLRA 9:7)
(Molecules)

VESELOV, M.G.

USSR/ Physics - Complex molecules

Card 1/1 Pub. 43 - 41/62

Authors : Veselov, M. G., and Rekasheva, T. N.

Title : Certain generalizations of the "metallic" model in the theory of complex molecules

Periodical : Izv. AN SSSR. Ser. fiz. 18/6, 711-712, Nov-Dec 1954

Abstract : A review is made of certain complications involved in the use of the "metallic" model of molecules with conjugated bonds for systems with incomplete equalization of simple and double bonds and for the calculation of the induction effect in conjugated systems. Means of neutralizing the complications are described. Tables.

Institution : The A. A. Zhdanov State University, Physics Inst., Leningrad

Submitted : .....

VESELOV, Mikhail Grigor'yevich; NOVOZHILOV, Yu.V., redaktor; VOLCHOK, K.M. tekhnicheskiy redaktor.

[Elementary quantum theory of atoms and molecules] Elementarnaia kvantovaia teoriia atomov i molekul. Moskva, Gos.izd-vo tekhniko-teoret. lit-ry, 1955. 184 p. (MLRA 8:9)
(Quantum theory)

Ve
Veselov, M.G.

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1-4E3D

Adiabatic approximation in the quantum theory of atoms. M. G. Veselov and I. B. Bernshtein. *Vestnik Leningrad. Univ.* 12, No. 16, *Ser. Fiz. i Khim.* No. 3, 55-6(1957).—Sepn. of motion of the series electrons from that of the core electrons is considered in the adiabatic approximation. The quantum-mech. treatment is 1st carried out for the core electrons at different spacial configurations of the outer electrons, while the series electrons are treated as moving under the averaged field of the core electrons. The polarization of the inner at. shells by the series electrons is taken into account automatically. Li atom is given as an example.

A. Ubachyi

VESELOV, M.G.; BERSUKER, I.B.

Adiabatic approximation in the quantum theory of atoms [with summary in English]. Vest. LGU 12 no.16:55-56 '57. (MIRA 10:11)
(Nuclear physics)

AUTHORS: Veselov, M. G., Bersuker, I. B. SOV/48-22-6-5/28

TITLE: The Adiabatic Approximation Method in the Quantum Theory of Atoms (Adiabaticheskoye priblizheniye v kvantovoy teorii atomov)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol. 22, Nr 6, pp. 662-664 (USSR)

ABSTRACT: The following simplification is assumed: In order to sort out the electron states to be investigated from a combined system, it is assumed that the potential field in which the individual electrons move and which is determined by the coordinates of all electrons, is replaced by any effective field which is brought into line in a certain manner with all electron coordinates. It was found on the basis of physical considerations that such a simplification differs with respect to the electrons of the inner and outer shells respectively. The difference between the velocity of optical- and shell-electrons leads one to suppose that the electron cloud of the shell follows the comparatively slow external electrons adiabatically and without inertia. It is suggested that the quantum-theoretical multi-electron problem be divided into 2 stages as follows: 1.) According to the motion of electrons. 2.) According

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to the motion of the nuclei in accordance with the molecule theory. For the demonstration of the adiabatic approximation method the lithium atom was selected. The conclusion is drawn that the wave function of the shell and the field created by the shell electrons depends to a considerable extent on the position of the exterior electrons. The potential of this field is mentioned as amounting to 4,375 a.e. (which is not in agreement with the value computed by Hartree (Khartri) and Fock (Fok) which was 5,375.) The equations for the external electrons are integrated for the states 2s, 2p and 3p. A further application of adiabatic approximation is represented by the theoretical substantiation of a formula which takes into account the influence exercised by the polarization of the shell of the system on the probable transitions of the optical electrons (Ref I). In this case a correction function "G" is used in the formula, in which this influence is taken into account. There are 2 references, 2 of which are Soviet.

The Adiabatic Approximation Method in the Quantum Theory of Atoms

SOV/48-22-6-5/28

ASSOCIATION: Leningradskiy gos. universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov)

1. Atoms--Theory 2. Electrons--Motion 3. Perturbation theory 4. Mathematics

Card 3/3

AUTHORS: Adamov, M. N., Veselov, M. G., Rebane, T. K. SOV/48-22-9-1/4o

TITLE: The Electric and Magnetic Properties of Molecules With Complicated Structure Calculated on the Basis of the Free-Electron Model (Raschety elektricheskikh i magnitnykh svoystv slozhnykh molekul na osnove modeli svobodnykh elektronov)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958, Vol 22, Nr 9, pp 1o15 - 1o18 (USSR)

ABSTRACT: The authors succeeded in computing the polarizability and the diamagnetic susceptibility of π-electrons on the basis of the simple model of the free electrons. The polarizability α of atoms and molecules usually is computed by perturbational methods. For the computation of the π-electron longitudinal polarizability of the polyenes $C_{2n}H_{2n+2}$ the formulae

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$$\alpha_n(\omega) = \frac{4E_n}{L\omega^4}\left[p_n \frac{(-1)^n - \cos p_n L}{\sin p_n L} + \frac{(-1)^n - \cos q_n L}{\sin q_n L}\right] - \frac{1}{\omega^2} \quad (2)$$

and

$$\alpha_n(0) = \frac{L^4}{12\pi^4 n^2}(15 - \pi^2 n^2) \quad (3)$$

were employed. The results, together with the results obtained by Bolton (Ref 1), are listed in table 1. The polarizability of the electrons was also determined for the case of a ring-shaped and a hexagonal molecule. A simple mathematical scheme was worked out, which allows to determine the wave function and the energy spectrum of the π-electrons in the magnetic field very exactly. If the one-dimensional potential of the conjugate bonds is everywhere equal to zero, the problem is represented by the determination of the eigenvectors

of the Hermitian matrix. The energy spectrum of the π-electrons in the magnetic field and their diamagnetic susceptibility are determined according to the secular equation det W = 0. This computation method of the diamagnetic susceptibility can be extended also to the case of a variable one-dimensional potential. The method allows to consider the influence of the intramolecular periodic field as well as the deviations from the periodicity. Starting from the matrix-formulation of the problem the connection between the methods of the free electrons and of the molecular orbits was investigated. The agreement of the energy spectra shows by means of the results obtained by the semi-empirical method due to Pariser, Parr and Pople (Ref 4)that the depth of the potential well in the place where the atom j is situated is given by the equation $V_j = \frac{1}{2}\left[(2 - q_j)I_j + q_j\varepsilon_j\right] - N_j\beta$. This equation validates

Card 3/4 the semi-empirical formula suggested by Veselov and

Rekasheva (Ref 5). This formula describes the relation between the shape of the bottom of the potential well in conjugate molecules which contain hetero-atoms, and the potentials of the electron affinity and the ionization of single atoms. There are 2 tables and 5 references, 2 of which are Soviet.

ASSOCIATION: Leningradskiy gos. universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov)

AUTHOR: Veselov, M. G. SOV/53-66-4-8/10

TITLE: Vladimir Aleksandrovich Fok
On His Sixtieth Birthday
(K shestidesyatiletiyu so dnya rozhdeniya)

PERIODICAL: Uspekhi fizicheskikh nauk, 1958, Vol 66, Nr 4, pp 695-699 (USSR)

ABSTRACT: On December 22, 1958 the famous Russian theoretical physicist Vladimir Aleksandrovich Fok, Academician, celebrated his sixtieth birthday. He was born at St. Petersburg and received his scientific training at the fiziko-matematicheskiy fakul'tet Petrogradskogo universiteta (Physico-Mathematical Dept. of Petrograd University) and was trained as a laboratory worker (stipendiary) at the Gosudarstvennyy opticheskiy institut (State Optics Institute) under Rozhdestvenskiy, where he collaborated with Terenin, Gross, Frish and others. Fok studied theoretical physics and mathematics and published his first two scientific papers (on the quantum theory and on integral equations) already in 1922. From 1924 to 1936 he worked at the Fiziko-tekhnicheskiy institut (Physico-Technical Institute)

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and from 1928 to 1941 he supervised theoretical research work at the State Institute of Optics. He remained faithful to Leningrad, the city of his birth: It was at Leningrad University that he worked as a student, aspirant, docent, professor, and, finally, as head of the chair of theoretical physics. His career as a scientist is described in detail and so are the most important of his publications. His activities extended to the following fields: Elasticity theory, Schrödinger (Shredinger) wave-mechanics, the theory of heat, the quantum theory, statistics, problems of Riemann (Riman) geometry and the conformal image, quantum electrodynamics, skin effect, fields related to physical chemistry, theory of rock investigation, etc. In recognition of his achievements he was awarded a number of prizes and decorations (Mendeleyev prize, Stalin prize of the first class, order of the red banner of work, etc.). In 1932 he was appointed corresponding member of the Academy of Sciences, and in 1939 he became a regular member of the Academy of Sciences, USSR. In conclusion, a list of Fok's scientific works is given. There are 1 figure and 37 Soviet references.

VESELOV, M.G.

82087
S/054/60/000/003/001/021
B020/B067

5.4600

AUTHORS: Veselov, M. G., Labzovskiy, L. N.

TITLE: Calculation of Polarizability of a Negative Hydrogen Ion

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii, 1960, No. 3, pp. 5-6

TEXT: A whole number of electrical, optical, and chemical properties of atomic systems are determined to a high degree by their polarizability and, therefore, a large number of papers deal with the quantum-mechanical calculation of polarizability of atoms and molecules. The polarizability of the negative hydrogen ion was calculated theoretically because no experimental data whatsoever were available on this subject. Some approximation calculations of polarizability of the negative hydrogen ion have been made already in various modifications by some authors (Refs. 1,2). In the present paper, the results are determined more precisely. In the existing quantum-mechanical methods of calculating the polarizability of electrons of atomic systems, the perturbation theory

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Calculation of Polarizability of a Negative Hydrogen Ion

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was used sometimes in combination with the variation method. For the correction E_2 to the energy, the variational principle

$E_2 = 2\int\psi_0^2\left\{(V-E_1)\varphi+\frac{1}{4}(\nabla\varphi)^2\right\}d\tau = \min$ (1) can be formulated in second perturbation-theoretical approximation. The polarizability in the field direction is expressed by equation (2) $E_2 = -\alpha E^2/2$. The results of calculation depend on the choice of the trial function φ and the accuracy of determination of ψ_0 (non-perturbed wave function of the system). For calculating the polarizability, which, as is known, gives the volume of the system and, therefore, depends to a considerable degree on the decrease of ψ_0 at large distances from the nucleus, a proper consideration of the asymptotic behavior of ψ_0 is of special importance. In calculating the polarizability, equation (6) gives a more accurate solution than equation (5). The authors calculated the polarizability of the negative hydrogen ion with the aid of the variational method and by using equations (4) and (6), where equation (7) was assumed for P_n, and $\alpha = 1.074$, $\beta = 0.478$, and $c = 0.312$ were obtained for the variable

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Calculation of Polarizability of a Negative Hydrogen Ion

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parameters. The values calculated in earlier papers are compared with those obtained by the authors (Table). On the basis of the results obtained by the authors, the values for the energy of electron affinity and for the polarizability ($\alpha = 21.5.10^{-24}$ cm^3) were obtained. The authors assume the latter to be the most reliable for the polarizability of the negative hydrogen ion. There are 1 table and 5 references: 2 Soviet, 2 US, and 1 French.

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VESELOV, M.G.; LABZOVSKIY, L.N.

Calculation of the polarizability of a negative hydrogen ion. Vest. LGU 15 no.16:5-6 '60. (MIRA 13:8)
(Hydrogen)

VESELOV, M.G.; ANTONOVA, I.M.; BRATTSEV, V.F.; KIRILLOVA, I.V.

Tables of the parameters of analytic wave functions of atoms and ions. Part 1. Opt. i spektr. 10 no.6:693-696 Je '61. (MIRA 14:8)
(Functions, Analytic) (Wave mechanics)

VESELOV, Mikhail Grigor'yevich; ORLOVA, L.I., red.; KIL'VEYN, N.A., tekhn. red.

[Elementary quantum theory of atoms and molecules] Elementarnaia kvantovaia teoriia atomov i molekul. Izd.2., dop. Moskva, Gos. izd-vo fiziko-matem. lit-ry, 1962. 216 p. (MIRA 15:3)

(Quantum theory)

ACCESSION NR: AT4011495 S/2910/63/003/01-/0035/0040

AUTHOR: Veselov, M. G., Labzovskiy, L. N.

TITLE: Adiabatic approximation with exchange in the atomic theory

SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik, v. 3, no. 1-2, 1963, 35-40

TOPIC TAGS: atomic theory, quantum mechanics, lithium atom, adiabatic approximation, core electron, valence electron, electron spin, Pauli exclusion principle, electron motion, optical electron, wave function, spin function, Fock equation

ABSTRACT: This is a continuation of the authors' previous work in adiabatic approximation (Vestnik LGU, No. 16, 55, 1957 and Izv. AN SSSR, ser. fiz. 22, 662, 1958), in which the polarization effect between the core electrons and the outer electron (optical electron) and its effect on the motion of the outer electron was considered. The present article extends this theory to a monovalent atom in which the exchange between the core electrons and the optical electron is taken into account. The atomic wave function is written as a product of the outer electron wave function and the wave function of the core which is parametrically dependent upon the position of the outer electron. The total number of electrons is assumed to be $2p + 1$, and is divided into 2 clusters according to the spin direction (1, 2,..., $p + 1$, and $p + 2$,..., $2p + 1$). The linear combination of these atomic wave functions is an

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ACCESSION NR: AT4041495

eigen function of the operator of the square of complete spin and satisfies Pauli's principle when multiplied by the spin function. Schroedinger's equation and a variational procedure is used to obtain the wave function of the outer electron. The wave function of the core is now assumed to be known and its energy serves as the potential energy for the outer electron. An equivalent of the Fock equation is derived for the outer electron. Using the product representation of the total electron wave function, a correction term for the exchange energy is derived. In the case of the lithium atom the exchange energy is -0.030 atomic units while the energy of the outer electron is -0.201 at. units, which compares favorably with the experimental value of -0.198 at. units. Orig. art. has: 31 equations.

ASSOCIATION: Fizicheskiy Institut pri Leningradskom gosudarstvennom universitete im. A. A. Zhdanova (Institute of Physics, Leningrad State University)

SUBMITTED: 00

ENCL: 00

SUB CODE: GP

NO REF SOV: 004

OTHER: 002

Card 2/2

L 6935-65 EWT(m)/EWP(t)/T Pc-4 ASD(a)-5/ASD/APWL MS

ACCESSION NR: AP4039910 S/0058/64/000/004/D012/D012

SOURCE: Ref. zh. Fiz., Abs. 4D84

AUTHORS: Veselov, M. G.; Mestechkin, M. M.

TITLE: Account of the overlap of atomic functions in calculations of conjugated molecules by the LCAO method

CITED SOURCE: Lit. fiz. sb., v. 3, no. 1-2, 1963, 269-276

TOPIC TAGS: atomic orbital, molecular orbital method, atomic wave function, conjugated system

TRANSLATION: It is shown that the equations of the LCAO molecular orbital method have the same form as in the zero differential overlap approximation, provided the multicenter integrals are taken in the Mulliken approximation. Semi-empirical expressions are obtained for the parameters α and β.

SUB CODE: NP ENCL: 00

Card 1/1

L 6926-65 EWT(1) IJP(c)/AS(mp)-2/ASD(a)-5/ESD(t)

ACCESSION NR: AR4039902 S/0058/64/000/004/D002/D002

SOURCE: Ref. zh. Fiz., Abs. 4D8

AUTHORS: Veselov, M. G.; Libzovskiy, L. M.

TITLE: Adiabatic approximation with exchange in atomic theory

CITED SOURCE: Lit. fiz. sb., v. 3, no. 1-2, 1963, 35-40

TOPIC TAGS: adiabatic process, atomic theory, exchange reaction, variational calculus

TRANSLATION: The adiabatic approximation for a monovalent atom is considered with account of the exchange between the core electrons and the optical electron. An equation with exchange is derived for the optical electron from a variational principle. A correction with

Card 1/1

SUB CODE: NP ENCL: 00

KIRILLOVA, I.V.; VESELOV, M.G.; BRATTSEV, V.F.

Tables of parameters of analytic wave functions of atoms and ions. Part 3. Opt. i spekt. 15 no.2:145-147 Ag '63. (MIRA 17:1)

VESELOV, M. G.

"On Quantum-Mechanical Calculation of the Optical Transition Probabilities in Atoms."

report submitted to 11th Intl Spectroscopy Colloq, Belgrade, 30 Sep-4 Oct 63.

VESELOV, M.G., prof., otv. red.; SMIRNOVA, M.Ye., red.; ZHUKOVA, Ye.G., tekhn. red.

[Problems of quantum chemistry] Voprosy kvantovoi khirurgii; sbornik statei. Leningrad, 1963. 136 p. (MIRA 16:12)

1. Leningrad. Universitet.
(Quantum chemistry)

KIRILLOVA, I.V.; VESELOV, M.G.; BRATTSEV, V.F.

Tables of the parameters of analytic wave functions of atoms and ions. Part 2. Opt. i spektr. 15 no.1:3-8 Jl '63. (MIRA 16:8)

(Wave mechanics)

L 17793-63 EWT(1)/FCC(w)/BDS/ES(w)-2 AFFTC/ASD/IJP(C),SSD Pab-4

ACC NR AP3005833 S/0051/63/015/002/0145/0147

64

AUTHOR: Kirillova, I.V.; Veselov, M.G.; Brattsev, V.F.

TITLE: Tables of parameters for the analytic wave functions[21] of atoms[21] and ions[21]

SOURCE: Optika i spektroskopiya, v.15, no.2, 1963, 145-147

TOPIC TAGS: wave function , spectroscopic term , atomic configuration , energy level

ABSTRACT: The paper gives the results of more accurate calculations refining earlier computations (M.G.Veselov, I.M.Antonova, V.F.Brattsev and I.V.Kirillova, Optika i spektroskopiya, 10, 6, 1961 and I.V.Kirillova, M.G.Veselov and V.F.Brattsev Optika i spektroskopiya, 15, 3, 1963) of some terms of the configuration $1s^2 2p^{k+2}$.

The better approximation was made by comgining the above terms with terms of the $1s^2 2p^{k+2}$ configuration and using the two-configuration approximation. The wave functions in the two-configuration approximation were written in the usual form as the sum (with coefficients) of the wave functions of the equivalent terms of the ground state and excited configurations. The new results are tabulated. Use of the calculated coefficients in the appropriate semiempirical formulas

Card 1/2

L 17793-63

ACC NR: AP3005833

0

allows of calculating the energy values in isoelectronic series with the usual experimental accuracy. Orig.art.has: 3 formulas, and 2 tables.

ASSOCIATION: none

SUBMITTED: 20Dec62 DATE ACQ: 06Sept63 ENCL: 00

SUB CODE: PH NO REF SOV: 003 OTHER: 002

Card 2/2

L 13089-63 BDS/EWT(d)/EWT(l)/FCC(w) AFFTC/ASD IJP(C)
ACCESSION NR: AP3003402 S/0051/63/015/001/0003/0008

AUTHOR: Krillova, I.V.; Veselov, M.G.; Brattsev, V.F. 57

TITLE: Tables of the parameters of analytic wave functions 16 of atoms 21 and ions 21. Part.2.

SOURCE: Optika i spektroskopiya, v.15, no.1, 1963, 3-8

TOPIC TAGS: atomic wave function, hydrogen-like function, theoretical spectroscopy

ABSTRACT: The authors calculated the basic parameters of the hydrogen-like functions, α, β and γ, and the values of the term energies for a number of states with the configurations $1s^2 2s^k 2p^n$, where $k = 1, 2$ and $n = 1$ through 6 for 6 or 7 values of Z in each isoelectronic series starting with the neutral atom. The calculated values are tabulated. Although the one-electron approximation cannot give completely accurate quantitative values for spectrum terms, comparison of the calculation results with experiments shows that the comparative location of the terms and the order of splitting are correctly indicated. The equations used for the calculations are adduced. In addition, the authors give a semi-empirical formula for evaluating the energies of atoms and ions; this yields results in close agreement with experiment in most cases.

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S/051/62/013/003/001/012
E032/E514

AUTHORS: Veselov, M.G. and Bersuker, I.B.

TITLE: Computation of the lithium atom on the adiabatic approximation and calculation of the nuclear magnetic moment

PERIODICAL: Optika i spektroskopiya, v.13, no.3, 1962, 297-301

TEXT: An account of the adiabatic approximation was given in a previous paper (Vestn.LGU, No.16, 55, 1957; Izv.AN SSSR, ser. fiz., 22, 662, 1958). It is based on the assumption that the inner electrons are in much more rapid motion than the optical electrons so that for each instantaneous position of the latter the former succeed in reaching a stationary state. Thus, the wave function for the atom may be written down in the form $\Psi = \Phi\psi$, where ψ describes the slow sub-system of n-p-electrons and Φ describes the inner electrons whose state depends parametrically on the position of the optical electrons. Exchange effects between the two sets of electrons are therefore not taken into account. However, the polarization of the core by the optical electron and the effect of this polarization on the electron is

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automatically included. In this type of calculation the wave function for an inner 1s-electron becomes deformed and depends on the position of the optical electron, while the equation for the latter includes a "mirror-force" potential. The latter equation has been integrated for the 2s, 2p and 3p states. A similar method of calculation has been reported by H. Reeh (Naturforsch., 15a, 377, 1960). The wave equation has been integrated numerically and full numerical data are reproduced in the form of tables. It turns out that although the present results are somewhat better than those which can be obtained by the Hartree method they are still appreciably different from the experimental values. It is suggested that the discrepancy might be removed by the inclusion of exchange effects. The improved behaviour of the wave functions now reported near the origin has enabled the authors to carry out more accurate calculations of the magnetic moment of the lithium nucleus. The numerical results are as follows:

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Energy of the optical electron Table 3

State	Hartree-Fock (without exchange)	Present values	Experiment
2s	0.176	0.184	0.198
2p	0.126	0.128	0.130
3p	0.0559	0.0565	0.0573

Table 4

Magnetic moment of Li^7

	μ(nuclear magnetons)
Hartree-Fock method	4.63
Present work	3.31
Experiment	3.26

There are 4 tables.

SUBMITTED: July 1, 1961

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S/054/62/000/003/001/010
B102/B186

AUTHORS: Veselov, M. G., Labzovskiy, L. N.

TITLE: Consideration of the exchange in the adiabatic approximation in atomic theory

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 3, 1962, 30-35

TEXT: Adiabatic approximation was used to study the influence of core polarization due to the optical electron, by way of calculations analogous to those described in previous papers (Veselov, Bersuker. Vestnik LGU, no. 16, 55, 1957; Izv. AN SSSR. ser. fiz., 22, 662, 1958), in which the exchange interaction between the optical electron and the core electrons are considered. The total wave function in adiabatic approximation $\Psi = \Psi_k = \Psi(q_k)\,\Phi(q_1 \ldots; q_k)$ of a univalent atom with 2p+1 electrons is replaced by a wave function of definite symmetry properties reflecting the exchange effects: $\Psi = \sum_{k=1}^{p+1} (-1)^{k+1} \Psi_k$ so that

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Consideration of the exchange ...

$$\sum_{k=1}^{p+1}(-1)^{k+1}\Psi_k=\sum_{i=1}^{p+1}\sum_{k=1}^{p+1}(-1)^{k+1}|\Psi_k|_{q_i\rightleftarrows q_{2p+1}} \qquad (3).$$

Here $\Psi(q_k)$ describes the optical electron, $\Phi(q_1\cdots;q_k)$ the core electrons, $q_1\rightleftarrows q_{2p+1}$ means that q_1 and q_{2p+1} are exchanged in Ψ_k. As in the previous papers, the total wave function is calculated in two stages: firstly for the wave function of the core with the optical electron in fixed position is calculated, for the wave function of the optical electron. The result is a generalization of the relations obtained in the previous papers. The exchange correction to the atomic energy ($E = E_o + E_{ex}$) is given in approximation by

$$E_{ex}=\frac{p\int\Psi_0(r_1)\left[R(r_1,r_2)-E_0S(r_1,r_2)\right]\Psi^0(r_2)\,d\tau_1d\tau_2}{\int\Psi_0(r_1)\Psi^0(r_1)\,d\tau_1+p\int\Psi_0(r_1)S(r_1,r_2)\Psi^0(r_2)\,d\tau_1d\tau_2} \qquad (27);$$

and is calculated for the lithium ground state leading to $E_{ex} = -0.023$ at.un. This value comes close to the difference between the values found by the methods of Fok and Hartree respectively:

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S/054/62/000/003/001/010
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Consideration of the exchange ...

$E_F - E_H = -0.021$ at.un.

SUBMITTED: March 1961

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L 43097-65 EWT(m)/EPA(w)-2/EPA(w)-2 Pab-10/Pt-7 IJP(c) GS

ACCESSION NR: AT500 917 S/0000/64/000/000/0137/0145

AUTHOR: Barabash, L. Z.; Veselov, M. I.; Gol'din, L. L.; Zenkevich, P. R.; Pilgin, Yu. S.; Sivkov, Yu. P.; [illegible], A. N.; Shepelev, V. A.

TITLE: Survey report: operation of the 7-Gev proton synchrotron of the ITEF

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy. Moscow, Atomizdat, 1964, [illegible]

TOPIC TAGS: high energy accelerator

ABSTRACT: Operation of the 7-Gev accelerator for the period from September 1962 to May 1963 is discussed. The accelerator was run continuously from 9 a.m. Tuesday to 9 a.m. Saturday, i.e. 85 hours a week. On Saturday and Monday, preventive mainte-

L 43087-65

ACCESSION NR: AT5007917

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investigations on the accelerator itself, studies were made on the various operational conditions, the form and behavior of the equilibrium orbit, the frequencies [illegible] the effectiveness [illegible]

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ACCESSION NR: AT5007317

kinetic energy of the protons at the end of the cycle is 7.3 Gev. 31 beam observation stations are now used. Orig. art. has 10 figures, 7 formulas, 3 tables

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE SSSR (Institute of Theoretical and Experimental Physics, GKAE SSSR)

SUBMITTED: 26May64 ENCL: 00 SUB CODE NP

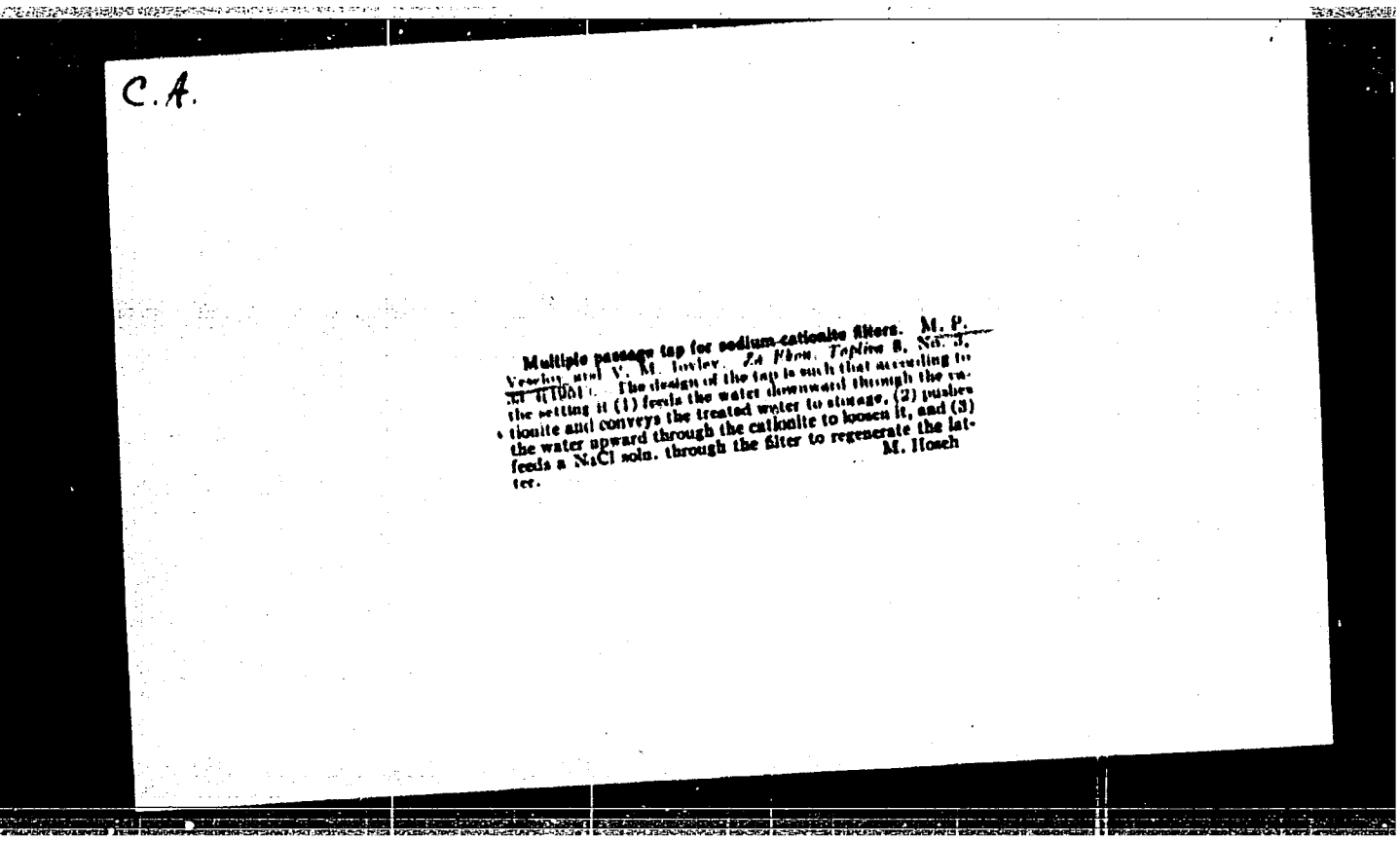
NO REF SOV: 006 OTHER: 002

Card 3/3

VESELOV, M.P.

Changes in the form of dysentery bacilli grown on media with levomycetin. Antibiotiki 10 no.7:642-647 Jl '65.
(MIRA 18:9)

1. Voyenno-meditsinskaya ordena Lenina akademiya imeni S.M. Kirova, Leningrad.



C.A.

Multiple passage tap for sodium-cationite filters. M. P. Vovkin and V. M. Ivolev. *Za Ekon. Toplivo* 8, No. 1, 31-4(1961). The design of the tap is such that according to the setting it (1) feeds the water downward through the cationite and conveys the treated water to storage, (2) pushes the water upward through the cationite to loosen it, and (3) feeds a NaCl soln. through the filter to regenerate the latter. M. Hosch

1. SHAPKIN, I. F. ; VESELOV, M. P.

2. USSR (600)

4. Feed Water Purification

7. Results of tests with a small size, sodium-regenerative, water softener unit. Energ. biul. no. 10 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

VESELOV, M.P. (Engineer)

Filters and Filtration

Two-story, mechanical filter. Za ekon. top., 9, No. 5, 1952

9. Monthly List of Russian Accessions, Library of Congress, August 1952 ~~1953~~. Unclassified.

VESELOV, M.P.

Salt

Arrangement for wet storage of sodium chloride for sodium-cation water softener. Za ekon. top. 9 no. 4, 1952.

Monthly List of Russian Accessions, Library of Congress, July 1952, Unclassified.

1. KORETSKII, A. F.; VESELOV, M. P.; Engs.

2. USSR (600)

4. Ventilation

7. Using vapor-ejector ventilation in compartments of petroleum barges during cleaning. Rech. transp. 13, No. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953. Unclassified.

SHAFKIN, I., VESSLOV, M. P.

Feed - Water Purification

Small water softening apparatus. Mor. flot 13 No. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

VESELOV, M.P.; KITA, V.F.

Measuring jump. Energ.biul. no.5:27-28 My '54. (MLRA 7:5)
(Pumping machinery)

Veselov, M.P.

SHAPKIN, Il'ya Fedorovich; VESELOV, Mikhail Petrovich; TUV, I.A., retsenzent; ALEKSANDROV, A.S., redaktor; SHLENNIKOVA, Z.V., redaktor izdatel'stva; TSVETKOVA, S.V., tekhnicheskiy redaktor

[Soda regenerative water softeners for steam equipment in river transportation] Sodoregenerativnye vodoumiagchiteli dlia rechnykh parosilovykh ustanovok. Moskva, Izd-vo "Rechnoi transport," 1957. 49 p. (MIRA 10:7)

(Feed-water purification)

VESELOV, M.I.

Studies on the fission rate of dysentery bacteria. Zhur.mikrobiol.epid. i immun.29 no.3:123 Mr '58. (MIRA 11:4)

1. Iz Voyenno-meditsinskoy akademii imeni S.M. Kirova.
(SHIGELLA PARADYSENTERIAE)

VESELOV, M.P., inzh.; KITA, V.F., inzh.

Automatic soda-regenrating water softener. Bezop.truda v prom. 3 no.7:23-25 Jl '59. (MIRA 12:11)
(Water—Softening)

VESELOV, M.P.; KRUPENINA, A.A.; BLINOVA, L.A.

Studies on the bactericidal and sporocidal properties of dichlorohydantoin and its derivatives. Zhur.mikrobiol.epid. i immun. 30 no.4:111-116 Ap '59. (MIRA 12:6)

1. Iz Voyenno-meditsinskoy ordena Lenina akademii imeni S.M. Kirova.

(HYDANTOINS, effects,
dichlorohydantoin & deriv., bactericidal & sporogenic eff. (Rus))

VESELOV, M.P., inzh.; KITA, V.F., inzh.

Operation of automatic control units of a soda-regenerating water softener. Bezop. truda v prom. 5 no. 2:21-23 F '61. (MIRA 14:2)

(Feed-water purification)